

Diagnosing a Farm Profitability Problem

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Introduction

Farms of similar type and size often have observed differences in net farm income. Net income on any farm depends on several factors, but much of the differences in net income between farms can be attributed to farm size, physical efficiencies of production, economic efficiencies of production, enterprise combinations, fixed cost structure and commodity marketing. A complete analysis of these areas of the farm business should be conducted on a regular basis. However, a diagnostic procedure for locating the source of a farm profitability problem is presented in this publication. A flow chart is used as a troubleshooting guide for identifying sources of profitability problems in a farm business. This approach assumes that a profitability problem does exist and uses the value of farm production as the starting point.

Value of Farm Production

The *value of farm production* is one way to measure farm size. It could also be called *gross profit* or *gross revenue*. It measures the volume of farm production in dollars and is calculated as follows:

Total cash receipts	
plus Inventory increases	
plus Value of products used in home	
minus Inventory decreases	
minus Feeder livestock purchases	
minus Feed purchased for feeder livestock	
equals Value of farm production	

This gives the dollar value of all agricultural production which has taken place on the farm during the year after adjusting for inventory changes. The diagnostic procedure illustrated here begins by looking at the value of farm production.

Low Value of Farm Production

If the value of farm production is low, we follow the left side of the flow chart (on page 2) to identify the problem. Total cash receipts (which make up the bulk of the value of farm production) are basically:

	Price per unit
times	Units per acre
times	Number of acres
equals	Total cash receipts

Therefore, if any one of these three items is low, then the value of farm production will be low. Proceeding down the left side of the flow chart, we begin to diagnose the reason for a low value of farm production.

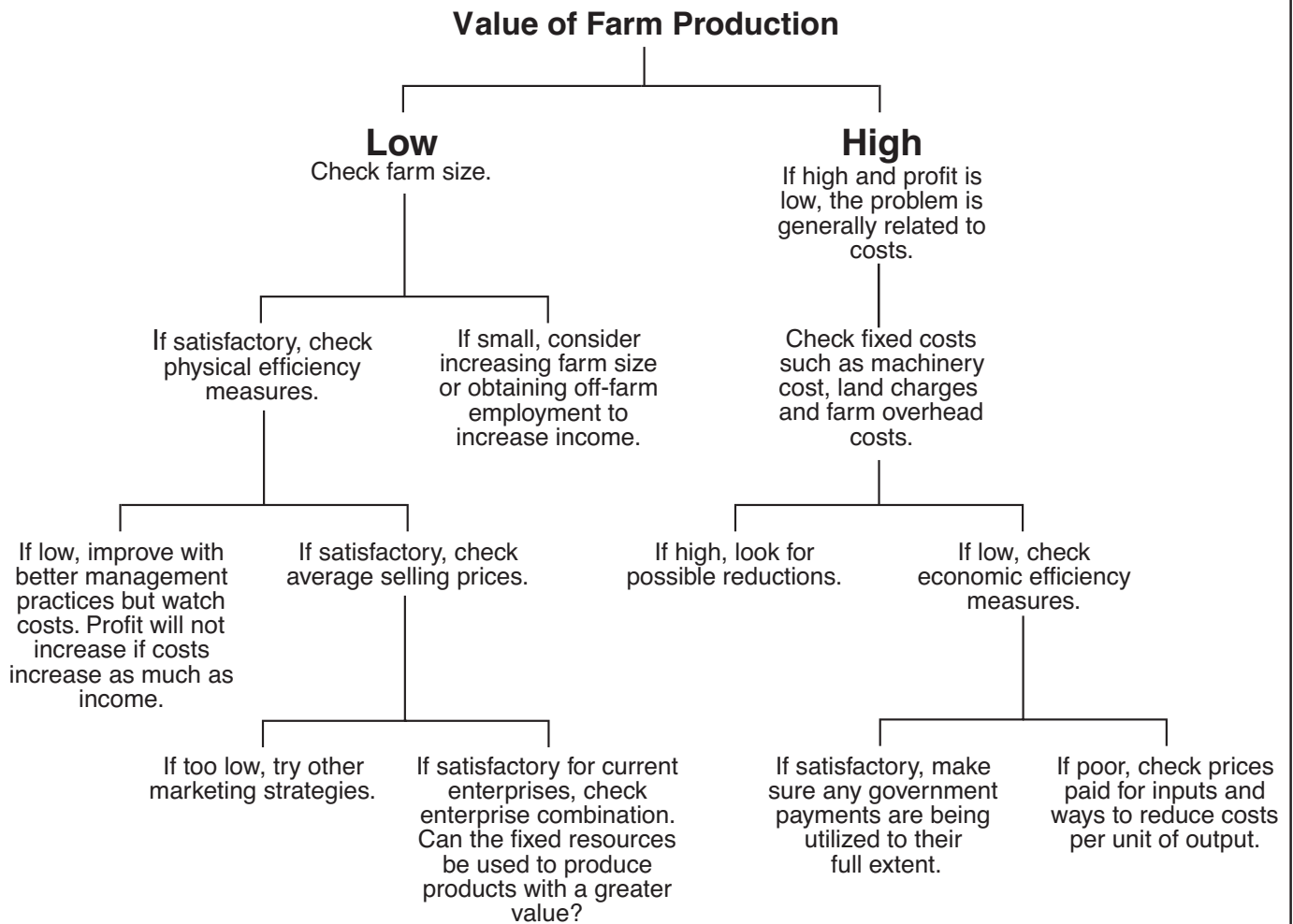
Farm Size

Check the number of acres or number of head of livestock in the operation. The farm manager may be earning as much income as possible off the size operation he currently has. If this farm is smaller than the profitable farms in the area, consider increasing farm size or obtaining off-farm employment to increase family

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Procedure for Diagnosing a Farm Profitability Problem



This table was adapted from Kay, Ronald D., *Farm Management: Planning, Control and Implementations*. Second edition. McGraw-Hill, Inc., New York. 1986. p. 181.

income. If farm size is adequate, check physical efficiency measures (i.e., production per acre).

Physical Efficiency Measures

The idea here is to measure how much output you are getting per unit of input. Yield per acre is by far the most used physical efficiency measure for row crops. There are many different ways to measure physical efficiency in a livestock enterprise. Some of the best ones would be average daily gain or average milk production per dairy cow.

If the physical efficiency measure is low, consult experts in areas such as soil fertility, pest control, irrigation management or livestock production to increase output. If the physical efficiency measure is satisfactory for current enterprises, check average selling prices.

Average Selling Prices

Poor marketing practices may be a cause of low profits. If the prices you typically receive for your products seem lower than the average or lower than what other farmers are getting, you may want to consider using a different marketing strategy. Consult a marketing expert to determine a marketing strategy that is right for you. Quality can also make a big difference in the price you actually receive for your crop. Producing a high-quality product usually results in higher profits.

If your average selling prices are satisfactory or above average, check your mix of enterprise combinations.

Enterprise Combinations

Perhaps the fixed resources such as land, labor and capital can be used to produce a different combination of crops and livestock to increase net income. The key to selecting a profitable enterprise combination is to identify the most limiting resource in the farming operation (usually land) and then select those enterprises with the greatest returns per unit of this limited resource.

High Value of Farm Production

If the value of farm production is high enough to provide a satisfactory net farm income, the profitability problem will generally be caused by excessive costs. This requires following the diagnostic procedures on the right-hand side of the flow chart.

Fixed Costs

The first thing to check is fixed costs, such as machinery and building depreciation, interest and general farm overhead costs. If they are high relative to the farm size and value of production, steps should be taken to reduce those which will have little or no effect on the level of production. Reducing fixed costs may be difficult and require some time, but all current and new investments and their related fixed costs should be carefully scrutinized. If the fixed and overhead costs appear satisfactory, check the economic efficiency measures for excessive variable costs.

Economic Efficiency Measures

These are ratios of costs or returns per unit of some input. There are many different measures you could use, and a good accounting system could produce any of them with little effort. Some of the more common measures of economic efficiency are fertilizer expense per acre, insecticide expense per acre, herbicide expense per acre, diesel fuel expense per acre, feed costs per 100 pounds of gain and rate of capital turnover. Any variable cost category you can identify should be examined. Converting these costs to a per acre basis can make them comparable to the cost of production estimates published by the Cooperative Extension Service or to other farms similar to yours.

Profitability Analysis and Financial Efficiency

There are many reasons for unprofitable operations. The use of financial ratio analysis is one approach that assists in identifying profitability problems within an operation. Ratios provide a common relationship that simplifies multi-year business analysis. In some instances, ratio analysis allows for balance sheet and income statement information to be combined. This provides insight relating to how the two statements influence one another. To a great extent, net worth value on the balance sheet is directly tied to profitability of the income statement. A business's net worth and equity increases only if: 1) asset values appreciate or 2) a net profit was produced. When a profit is generated, it shows up on the bottom line of the income statement and most likely in the current assets portion of the balance sheet.

In the early 1990s, the Farm Financial Standards Task Force established a set of financial benchmarks or goals for agribusinesses. A partial listing of these is found in Table 1. Given the diverse nature of agricultural operations, it is important to consider the size and type of business being analyzed. Acceptable financial benchmarks will vary given the primary crop or livestock enterprise.

Government Farm Program Benefits

Farm program benefits are essential to farms that produce farm program commodities. Farms that are eligible for program payments but are not receiving the full benefit of the programs operate at an economic disadvantage. Farm program benefits indirectly affect the value of farm production, but directly affect farm profitability.

Summary

This diagnostic procedure should help a farm manager identify all the factors impacting the value of farm production and help isolate areas in need of improvement that could increase farm profitability.

Reference

Kay, Ronald D. *Farm Management: Planning, Control and Implementation*. Second edition. McGraw-Hill, Inc. New York. 1986. pp. 163-184.

Table 1. Profitability Analysis and Financial Efficiency.

Profitability Analysis	Calculation	Green	Yellow	Red
Operating Profit Margin Ratio	(NFIFO* + Farm Interest Expense – Operator Management Fee) / Gross Revenue	>25%	10% - 25%	<10%
Rate of Return on Farm Assets (ROA) (mostly owned)	(NFIFO* + Farm Interest Expense – Operator Management Fee) / Average Total Farm Assets	>5%	1% - 5%	<1%
Rate of Return on Farm Assets (ROA) (mostly rented)	(NFIFO* + Farm Interest Expense – Operator Management Fee) / Average Total Farm Assets	>12%	3% - 12%	<3%
Rate of Return on Farm Equity (ROE)	(NFIFO* – Operator Management Fee) / Average Total Farm Equity	6% - 10% range is acceptable. Varies depending on enterprise mix.		
Financial Efficiency	Calculation	Green	Yellow	Red
Operating Expense / Revenue Ratio (mostly owned)	Operating Expenses [excluding interest and depreciation] / Gross Revenue	<65%	65% - 80%	>80%
Operating Expense / Revenue Ratio (mostly rented)	Operating Expenses [excluding interest and depreciation] / Gross Revenue	<75%	75% - 85%	>85%
Interest Expense Ratio	Interest Expense / Gross Revenue	<12%	12% - 20%	>20%
Depreciation Expense Ratio	Depreciation Expense / Gross Revenue	<12% is acceptable goal		
Asset Turnover Ratio	Gross Revenue / Average Total Farm Asset	>.35 is acceptable goal. Varies depending on enterprise mix.		
Net Farm Income from Operations Ratio	NFIFO* / Gross Revenue	>20% is acceptable goal		

***NFIFO** – **N**et **F**arm **I**ncome **F**rom **O**perations excluding gains or losses from the disposal of farm capital assets.

Ratio benchmark recommendations provided by the Farm Financial Standards Taskforce and Council.

Table adapted from “Understanding Key Financial Ratios and Benchmarks,” by Dr. David Kohl (retired), Virginia Tech University.

Acknowledgment is given to Dr. Rob Hogan, former assistant professor - economist - farm management at the Northeast Research and Extension Center, University of Arkansas Division of Agriculture, who was one of the original authors of this fact sheet.

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